

Thermal Conductivity of Epitaxially-grown InP: Experiment and Simulation

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Electronic supplementary information (ESI)

High resolution X-ray diffraction analysis of the InP on Si samples. The out-of-plane misorientation of ELOG InP on Si was analyzed by performing ω -scans and reciprocal space mapping around the (004) reflections. The full-width half maximum (FWHM) of the X-ray rocking curve indicates an average out-of-plane misorientation of 360 arcsec (Fig. S1). This result is validated by the reciprocal space mapping in Fig. S1.b).

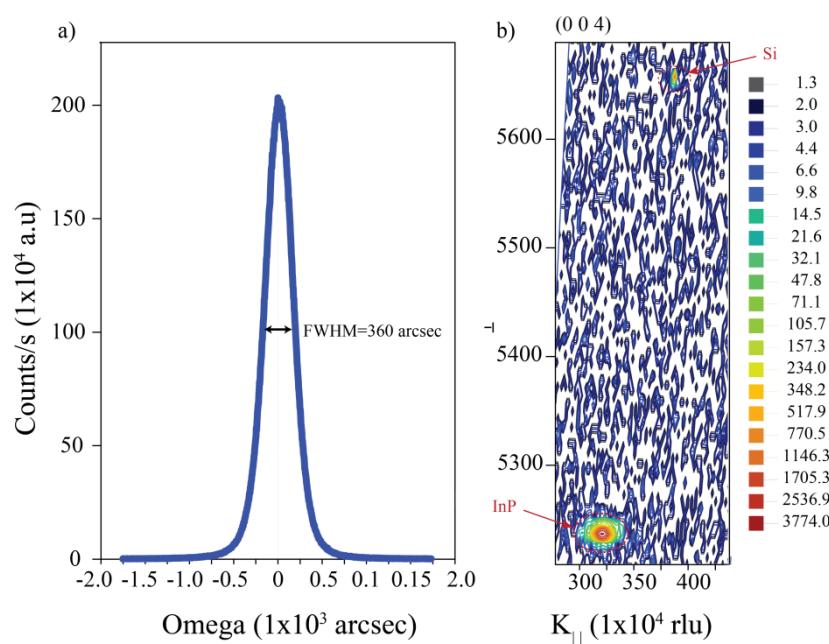


Fig. S1. a) HR-XRD Rocking curve (ω -scan) of the InP (004) reflection, measured for ELOG InP grown on Si. b) High resolution reciprocal space mapping close to the (004) reflection from the ELOG InP on Si. The Bragg peaks of InP and Si are plotted with diffraction intensities represented by contour lines as a function of the perpendicular and parallel components of the reciprocal lattice vector, k_{\perp} and k_{\parallel} .

Atomic force microscopy analysis of the surface morphology of InP on Si samples: Atomic force microscopy measurements indicate a smooth surface with a RSM roughness from 1 to 2 nm. Fig. S2 a) is a 4x4 μm scan of the surface of an ELOG layer grown on Si including the edge of the mesa located at the top left corner. Fig. S2b is a zoom of the region indicated by the dotted lines in Fig. S2a).

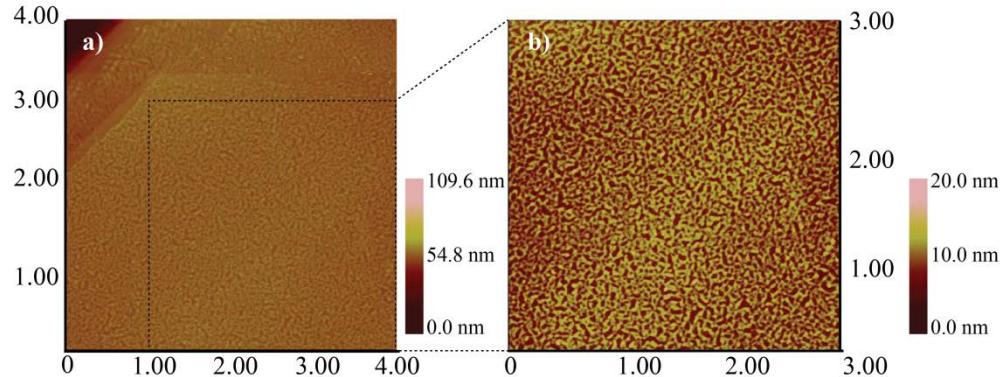


Fig. S2. a) AFM image of ELOG InP grown on Si including the edge of the mesa and b) 3x3 μm zoom of the region indicated by the dotted lines. The AFM analyses revealed a smooth surface with a RSM roughness from 1 to 2 nm.